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Reply to Office Action of August 24, 2005

Amendments to the Drawings:

The attached sheet of drawing includes changes to Figure 1. In Figure 1, previously provided descriptive text labels are being corrected for items 22 and 24 to properly label the items as secondary and primary (rather than primary and secondary) to better comply with the written description and match the originally filed, informal figures.

Due to the simplicity of the changes, an annotated sheet showing changes is not presented with this Amendment.

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REMARKS/ARGUMENTS

Prior to this Amendment, claims 1-15 were pending in the application.

Claim 15 is amended to address an antecedent basis issue and to correct a typographical error. Entry of the Amendment is respectfully requested as it does not raise new substantive issues but, instead, merely places claim 15 in condition for allowance or use on appeal.

After entry of the Amendment, claims 1-15 remain for consideration by the Examiner.

Rejection of Claims Under 35 U.S.C. §112

In the August 24, 2005 Office Action, claim 15 was rejected under 35 U.S.C. §112, second paragraph, as being indefinite due to the lack of antecedent basis for "the server" in line 16. Claim 15 is amended to remove any antecedent basis problems.

Rejection of Claims Under 35 U.S.C. §103

Additionally, in the Office Action, claims 1-6, 8-13, and 15 were rejected under 35 U.S.C. §103(a) as being obvious over the Background of Applicant's specification in view of U.S. Pat. No. 6,392,990 ("Tosey"). This rejection is traversed based on the following remarks.

As discussed in the prior Amendment, claim 1 is directed to a communication adapter system that includes in a server a primary I/O board and an secondary I/O board as well as a primary switch and a secondary switch that link the adapter system to a network. An executable program is provided on the server that generates a connectivity signal **to the primary switch** to test connectivity from the primary I/O board to the primary switch. When a response signal is not received **from the primary switch** in a predetermined time period, a primary NIC is configured to disable data transfer to the primary switch and a secondary NIC is configured to enable data transfer through the secondary switch. Emphasis is

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added to indicate key differences between Tosey and the claimed invention, i.e., Tosey is directed toward peer-to-peer connectivity testing and fails to teach performing a connectivity test between a primary NIC to a primary switch. Because Tosey teaches a method that tests a different connectivity, it fails to teach each and every element of claim 1 even when combined with Applicant's Background teaching.

In the Response to Arguments, the Examiner states on page 10 that "Tosey teaches generating a connectivity signal (a ping) to the primary switch (hub A 22) to test connectivity from the network computing device 21 to the primary switch," and the Examiner believes this follows since the device 21 is passing the ping through the hub on its way to the peer device. However, claim 1 is amended to specifically call for sending a connectivity signal to the switch and to receive a response from the switch. This is functionally very different then the Tosey teaching of passing a ping through a hub to a peer device and then passing a response from the peer device through the hub to the sending network device. With the claimed system, the lack of a response indicates there is no connectivity between the switch and the primary NIC, which can be addressed as claimed by connecting the secondary NIC to the secondary switch.

In contrast, in Tosey, a lack of a response may indicate a connectivity problem anywhere between the peer device and the sending device — but would not definitively indicate the problem was between the sending device and the hub as the hub did not generate and send a response (i.e., is not responsible for responding). Hence, the fix provided in claim 1 may not be useful in Tosey as setting up a path to a new hub may not fix the connectivity issue (such as when the problem is between the hub and the peer). Tosey fails to show at least the generating of a connectivity signal that is sent to the primary switch and monitoring for a response signal from the primary switch (i.e., Tosey teaches sending a signal

through the hub and receiving a signal from a peer through the hub), and claim 1 is not made obvious in light of the Tosey teaching and Applicant's background.

The Examiner further argues at the top of page 11 that Tosey states that it can determine when the hub fails "therefore, the link test must also be used to test connectivity to the hub." Applicant strongly disagrees. Tosey indicates that if a network peer fails to respond to a ping this may indicate a failure somewhere within the transmission line/connection path between the sending device and the network peer. However, there is no way in the Tosey method to know if the problem is between the sending device and the hub because the ping is not sent to the hub and responded to by the hub (i.e., the response is NOT from the hub which merely passes the ping and the response). The connectivity problem may be between the hub and the peer device or with the peer device itself.

At this point in the discussion and prosecution, it may be useful to look more thoroughly at Tosey to understand the differences between Tosey's teachings and the system of claim 1. From the step (b) of the method of claim 1 of Tosey, it can be seen that the Tosey disclosure is directed to "testing a communication link with at least one said individual peer computing device on said list of network addresses using said primary network interface, wherein said testing of said communication link is executed periodically until at least one said individual peer computing device from said list of network addresses responds." As can be seen, any intermediary devices such as a hub or switch are not responsible for generating the response or receiving the response as the testing it of the link to the peer device and the peer device responds. This produces a differing result than the system of claim 1. For example, Tosey requires an active peer for the testing to work (i.e., what happens if the testing device is the first active peer – appears need at least two devices or else would continually fail over). In contrast, in the system of claim 1, connectivity between the primary NIC and switch can be checked without any peer devices for the server and/or hosts of claim 1.

Further, claim 1 only calls for a connectivity signal to be used which may include lower level testing such as electrically NIC connectivity tests. In contrast, Tosey relies solely on higher level peer connectivity tests, which further supports Applicant's argument that the ping is not sent to hub or responded to by the hub as hubs generally do not include intelligence for responding to higher level tests. For example, Tosey states that there "are three main techniques that could be used to carry out this test: the Internet control message protocol (ICMP), the address resolution protocol (ARP), or the method of attempting to access a TCP or UDP port on another device" (see, col. 6, lines 46-55). Again, all the discussion in Tosey is directed to peer-to-peer communications between networked computing devices.

The following discussion from the prior Amendment is included for the sake of completeness and because Applicant believes it is still relevant and distinguishes claim 1 from Tosey and the teaching of Applicant's Background.

"As discussed in Applicant's Background, prior to Applicant's invention, prior adapter systems that addressed the problem of a single point of failure (SPOF) had redundancy but "could only test connectivity up to the NIC and could not query the switch or any other remote device on the network. Accordingly, the switch could fail and the HAnet system would not detect it, because it had no capability to go beyond the NIC layer." The adapter system of claim 1 is not shown by Applicant's Background teach because prior adapter systems were only configured to test connectivity up to the NIC.

The Office Action cites Tosey for teaching in its Figures 2 and 4A generating a signal to a primary switch to test connectivity up to that switch. Applicant disagrees with this construction of Tosey's teaching. In Figure 4A, Tosey teaches its failure detection and recovery method. As can be seen, Tosey teaches transmitting a link test "to candidate network peers" and not

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to the hub 22. Claim 1 calls for the connectivity signal to be sent to the primary switch and a response signal to be monitored to determine connectivity from the primary I/O board to the primary switch.

In contrast, Tosey teaches that "a network computing device must establish that it cannot communicate with any other device through the network interface card" (see, col. 5, lines 64-66) and does so by contacting the router 24 (see col. 6, lines 4-5) to see if the network computing device 21 can communicate with one of its peer devices (not shown in Figure 2). Steps 104 and 108 of Figure 4A is explained in more detail from col. 6, line 25 to col. 7, line 34. As can be seen from this description, Tosey is describing a technique of a first network computing device 21 looking for at least one other network computing device or peer connected to the router 24 that it can communicate with and by finding such a device or peer it is sufficient to determine that the network interface 25 of the device 21 has not failed. However, if a signal is not received, the network computing device 21 will not be able to determine if the failure is in the hub 22, in the link 29, in the router 24, or elsewhere in the networked system 28. The link test passes through the hub 22 but is not responded to by the hub 22 which merely passes a response from a peer device to the computing device 21.

In direct contrast, the adapter system of claim 1 calls for sending a connectivity signal to the primary switch and waiting for a response signal from that primary switch. In this manner, the adapter system of claim 1 is able to accurately identify a failure within the adapter system but out to the switch. Because the combination of Applicant's Background and Tosey fail to teach or suggest each element of claim 1, the rejection of claim 1 is improper and should be withdrawn."

Claims 2-6 depend from claim 1 and are believed allowable as depending from an allowable base claim.

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Independent claim 8 is directed to a method claim with similar limitations (but in method form) as that of claim 1. Hence, the reasons for allowing claim 1 over the combined teachings of Applicant's Background and Tosey are believed applicable to claim 8. Claims 9-13 depend from claim 8 and are believed allowable as depending from an allowable base claim.

Additionally, In the Office Action, claims 7 and 14 were rejected under 35 U.S.C. §103(a) as being unpatentable over Applicant's Background in view of Tosey and further in view of U.S. Pat. No. 6,243,838 ("Liu"). This rejection is traversed based on the following remarks.

Claims 7 and 14 depend from claims 1 and 8, respectfully, and are believed allowable as depending from an allowable base claim. Liu is cited for teaching the notification of a system administrator feature added by these claims (e.g., notification after determination of a loss of connectivity between a primary I/O board and a primary switch). However, Liu fails to overcome the deficiencies of Applicant's Background and Tosey, and hence, the combination of these 3 references fails to teach or suggest the system and method of base claims 1 and 8. Therefore, claims 7 and 14 are allowable for the reasons for allowing claim and 8.

Independent claim 15 is similar to claim 1 but calls for specific network information to be transferred to the secondary NIC, and the transfer of this type of information is not shown by the cited references. The Office Action cites Figures 5A and 5B showing transferal of a mobile IP address for a failed NIC 25 to a secondary NIC 26. However, this does not show transferring network information including IP addresses "of other devices connected to the network netmask, or broadcasts" from a primary to a secondary NIC. Hence, Tosey fails to overcome the admitted lack of teaching of the claimed invention in Applicant's Background, and Tosey combined with Applicant's Background does not support an obviousness rejection of claim 15.

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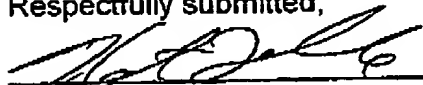Reply to Office Action of August 24, 2005

Conclusions

In view of all of the above, the claims are now believed to be in condition for allowance, and it is requested that a timely Notice of Allowance be issued in this case.

No fee is believed due for this submittal. However, any fee deficiency associated with this submittal may be charged to Deposit Account No. 50-1123.

Respectfully submitted,

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Attachment: Replacement Sheet (Fig. 1)